

CHAPTER 6

SAFETY ELEMENT



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GUIDING PRINCIPLE

The City of Carson is committed to promoting safety in order to enhance the livability, quality of life, business environment, positive image of the community, and reduce the effects of crime and environmental hazards to all citizens.

1.0 INTRODUCTION

The Safety Element is an official guide for the City Council, government agencies, and individuals to identify and understand potential hazards confronting the City of Carson. The Element evaluates natural and man-made hazards that have the potential to endanger the welfare and safety of the general public and aims to reduce the potential risk of death, injuries, property damage and the economic and social dislocation resulting from them. The concerns are subsequently incorporated into goals, policies and implementation actions to reduce the impacts of hazards.

2.0 STATE LAW REQUIREMENTS

The State of California Government Code Section 65302(g) requires that a General Plan include:

“...a safety element for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence, liquefaction and other seismic hazards identified pursuant to Chapter 7.8 (commencing with §2690) of the



Public Resources Code, and other geologic hazards known to the legislative body; flooding; and wild land and urban fires.”

Policies and information for this element are contained in the Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code Section 2621, et seq.), the Seismic Hazards Mapping Act (Public Resources Code Section 2690, et seq.), and the Unreinforced Masonry Law (Government Code Section 8875, et seq.).

3.0 SUMMARY OF FINDINGS

3.1 CITY PLANS AND PROGRAMS

The Standardized Emergency Management System (SEMS), California Code of Regulations, Title 19, Division 2, Section 2443, requires compliance with the SEMS to... “be documented in the areas of planning, training, exercise, and performance.” Compliance with the SEMS requires that emergency plans address the following five SEMS functions:

- Management;
- Operations;
- Logistics;
- Planning/Intelligence; and
- Finance/Administration.

The plan should also address mutual aid, operational areas, and multi/inter-agency coordination.

Carson has prepared a Multi-Hazard Functional Plan (1996) for emergency response within the City. The Plan meets the State’s Standardized Emergency Management System (SEMS) requirements of State law. The City also complies with the Los Angeles County Emergency Management Plan.

Threats and emergency response are thoroughly described and outlined in the SEMS Multi-Hazard Functional Plan. Key points of the plan include the identification of critical areas in the City that represent both dangers, as well as areas for meeting and staging in an emergency event, communications, and emergency evacuation. Parks and other large areas are identified as emergency shelter and meeting locations. An Emergency Operation Center (EOC), fully equipped with emergency communication equipment and cooking, showering and sleeping facilities is provided in City hall for seismic or other disaster situations. A Citywide amateur radio operating system has been implemented to maintain communications should other systems fail.

The Plan also identifies emergency routes. The City is fortunate in having four major freeways (I-405, SR-91, I-110, and I-710) that would serve as potential evacuation routes during a disaster. Arterial streets with right-of-way widths of from 80 to 100 feet form a grid pattern throughout the City at one-half mile intervals. East-west arterial streets that would be used as evacuation routes include Lomita



Boulevard, Sepulveda Boulevard, 223rd Street, Carson Street, Del Amo Boulevard, Victoria Street, Artesia Boulevard, and Alondra Boulevard. North-south arterial streets include Santa Fe Avenue, Alameda Street, Wilmington Avenue, Avalon Boulevard, Main Street, Figueroa Street and Broadway.

3.2 EXISTING CONDITIONS

The potential threat from natural and man-made hazards can pose significant danger to a community. Natural hazards include flooding, seismic activity, geology, soils and wind. Man-made hazards involve hazardous materials, transportation, oil production facilities, civil unrest, national security emergencies and terrorism. This section of the Safety Element addresses the existing conditions of these hazards and programs currently in place to address them.

3.2.1 NATURAL HAZARDS

FLOODING

Flood Hazards

Historically, flooding problems in the City of Carson have occurred in low lying areas and in areas where slopes are very flat and peak storm flows are unable to be quickly conveyed into the storm water collection system. Although Carson is located relatively close to the Pacific Ocean, the City has not been vulnerable to storm surge inundation associated with hurricanes and/or tropical storms. According to the City of Carson's SEMS Multi-Hazard Functional Plan, the City is not subject to inundation associated with dam failure. The limits of the 100-year storm are limited to the Dominguez Channel. In the event of a 500-year storm, the entire City would be flooded. Areas outside the 100-year storm limits may also flood due to deficient storm water conveyance.

During heavy rains, run-off water from the northeast part of the City is caught and contained in Del Amo Park, located at Avalon Boulevard and Del Amo Boulevard. Del Amo Park is designated by the Los Angeles County Food Control District as a catch basin to relieve the storm drain of excessive water that cannot be immediately handled during a rainstorm. A Los Angeles County pump station, located at the northeast corner of the catch basin, pumps the basin dry when the water flow subsides. An area for potential flooding is in the southeast corner of the City at a catch basin located on Santa Fe Street between Carson and Wardlow Streets. Run-off water is handled in the same manner as at Del Amo Park, which is used on a daily basis as a City recreation park facility. The catch basin on Santa Fe Avenue is also a public street on a day-to-day basis.

If evacuation due to flooding is necessary, the selection of sites for relocation centers should consider the following:

- Carriage Crest Park and Del Amo Park are low points and should not be used during a flooding incident.



- Dolphin Park may flood during a heavy storm. Its safety should be ascertained before use.
- If schools are to be used, avoid Towne Avenue Elementary, which is in a flood prone area, and Leapwood Avenue Elementary, which is in a mudslide prone area.
- California State University at Dominguez Hills is on high ground and is large enough to handle a major relocation, but access from south Carson may be blocked by flooded intersections and mudslides near the campus. Access routes must be carefully planned, if the campus is to be utilized as an emergency shelter.

According to the National Flood Insurance Program (NFIP) administered by the Federal Emergency Management Agency (FEMA), Carson is designated as a Zone “C” City (area of minimal flooding). Up until February 2000, FEMA indicated that roughly the eastern third of the City would be flooded during a 100-year storm event. However, on February 25, 2000, FEMA redesignated this area as not being within a flood zone, due to restoration of a section of the Los Angeles River levee system that provides flood protection for part of four surrounding communities, including the City of Carson. As a result of the restoration, areas in the City of Carson that were previously designated within Zone AR have been changed to the Zone X designation. Within the designation of Zone X, there is no federal obligation on lenders to require flood insurance. Exhibit SAF-1, *Flood Zones Map*, shows existing flood zone areas within Carson.

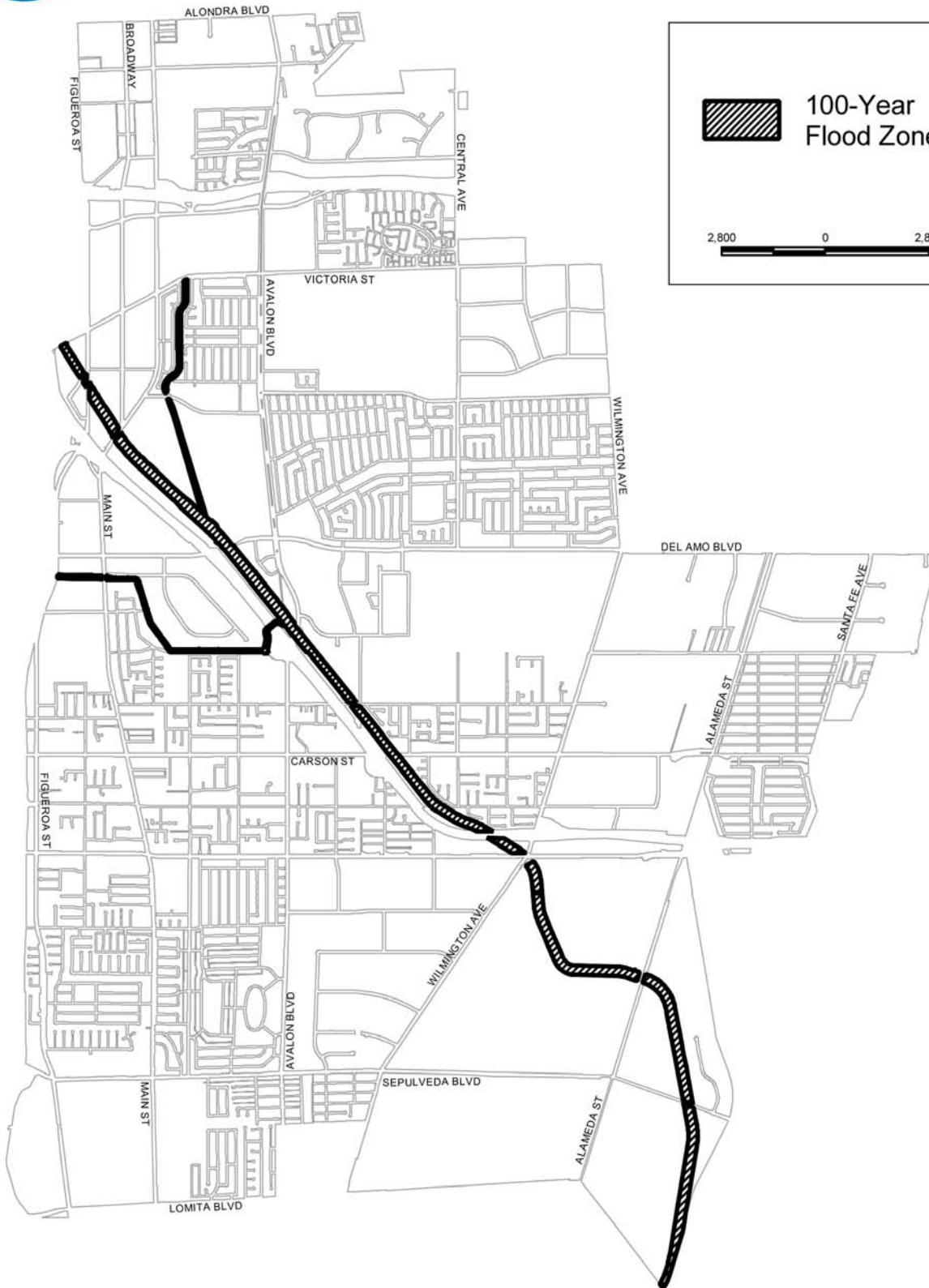
The City’s Emergency Operations Center (EOC) is located at City Hall. Should the City Hall EOC not be available for use due to flooding, or any other circumstances, the designated alternate EOC at the City’s Corporate Yard, would be activated. The City also has a mobile command unit.

Drainage Facilities

The Los Angeles County Department of Public Works (LACDPW) is the responsible agency for regional flood control protection within Los Angeles County. LACDPW presently owns and maintains three regional flood control facilities within or in close proximity to the City of Carson. These facilities include the Dominguez Channel, Compton Creek, and Wilmington Channel. Flows in the City are conveyed by several networks of large drainage facilities to the Dominguez Channel, the primary regional flood control system that traverses and serves the City. Areas in the southwest portion of the City and two smaller areas to the northeast do not convey flows to the Dominguez Channel.



CARSON GENERAL PLAN



Source: GIS Data, City of Carson, October 2002
OCTOBER 22, 2002

Flood Zone Map

EXHIBIT SAF-1



Two drainage reaches in the City of Carson are classified as unimproved watercourses. The first reach is aligned through the Victoria Golf Course, a Los Angeles County Department of Parks and Recreation facility, and extends from Dominguez Channel to 192nd Street. The second reach is aligned through the Carson Harbor Village Mobilehome Park, from Victoria Street to Albertoni Street.

The California State Department of Transportation (Caltrans) also operates and maintains several drainage facilities within the State's operating rights-of-way associated with the Harbor (I-110), Redondo Beach/Artesia (SR-91), and San Diego (I-405) Freeways.

In 1987, the City of Carson developed a Master Plan of Drainage. The Master Plan of Drainage divided the City into 12 major drainage zones and described the existing and proposed facilities required in each zone. In addition to the drainage facilities identified above, the Master Plan of Drainage identifies approximately 130 additional existing storm drains within the City.¹ The City's Master Plan of Drainage concluded that the existing storm drain system is generally adequate to provide flood protection for developed areas of the City with a few exceptions. Exhibit SAF-2, *Existing Drainage Facilities*, shows the existing drainage facilities within Carson.

The Master Plan of Drainage provides for flood protection from a storm with a return frequency of 50 years for sump areas and natural drainage courses, with the exception of Zone 2. For all other areas, flood protection from a storm with a return frequency of ten years is provided for in the Plan.

GEOLOGY

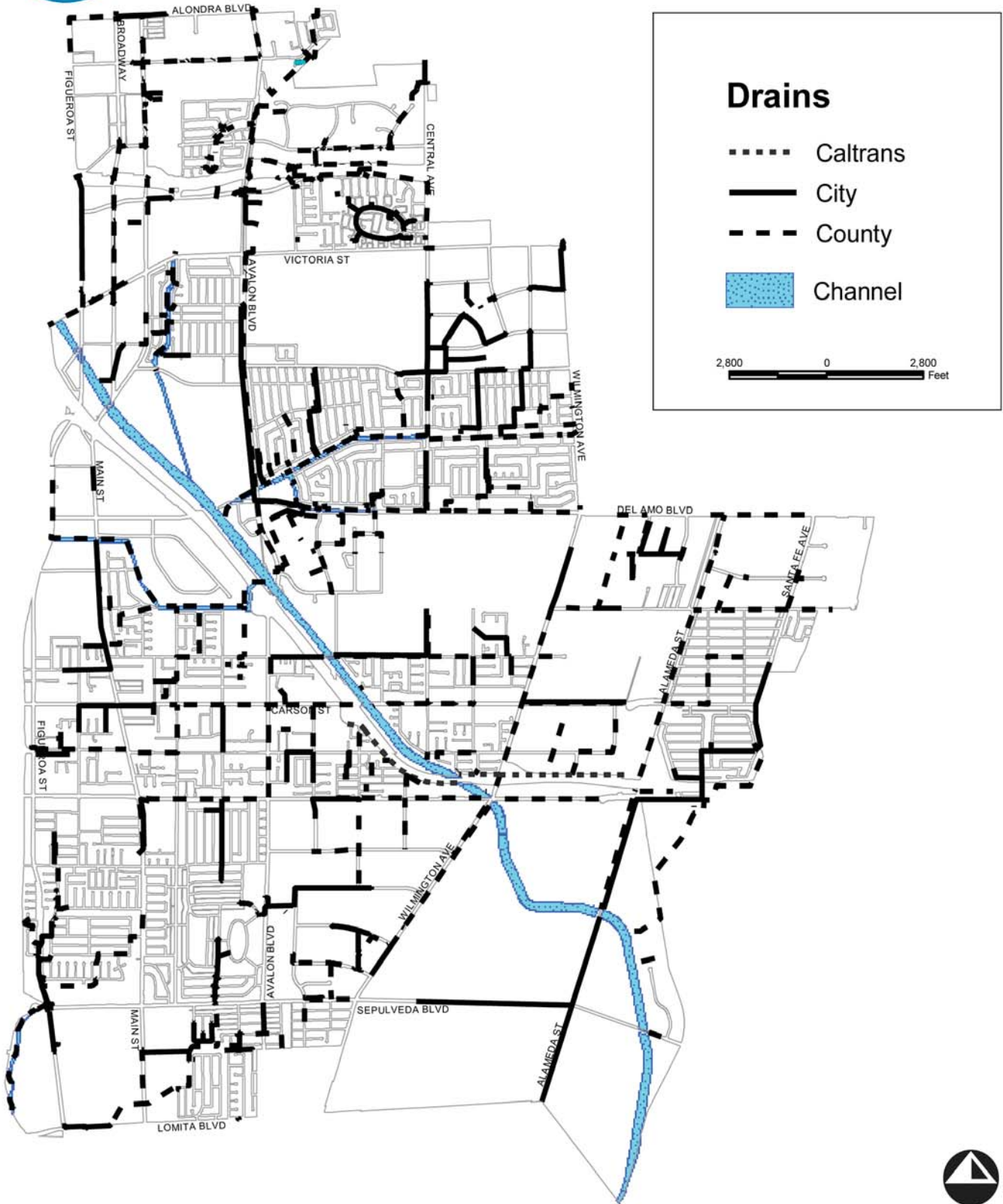
Geologic Characteristics

The City of Carson is located within the northerly end of the Peninsular Ranges geomorphic province. The Peninsular Ranges province extends from the Los Angeles Basin south of the Santa Monica Mountains to the tip of Baja California. This geomorphic province is characterized by elongated northwest trending mountain ranges separated by straight-sided sediment floored valleys. The northwest trend is further reflected in the direction of the dominant geologic structural features of the province, which are northwest-trending faults and folds. These include the Newport-Inglewood fault zone, the Paramount syncline², the Dominguez anticline³, the Gardena syncline, the Wilmington anticline, and the Wilmington syncline. Geologic units of the northern Peninsula Ranges province consist of Jurassic and Cretaceous age basement rocks overlain by as much as 32,000 feet of marine and non-marine sedimentary strata ranging in age from the late

¹ *City of Carson Master Plan of Drainage*, page 5, September 1987.

² Syncline: A fold that is convex downwards.

³ Anticline: A fold that is convex upwards.



Source: GIS Data, City of Carson, October 2002
OCTOBER 22, 2002

Existing Drainage Facilities

EXHIBIT SAF-2



Cretaceous to Holocene epochs. The north, west, and southern portions of Carson is underlain by stream Quaternary Non-marine Terrace Deposits (Qt). The central and southeastern portion of the City of Carson is directly underlain by Holocene age alluvial (Qal) deposits of the Downey Plain and Dominguez Gap. The alluvial deposits are composed of poorly consolidated sand, silt, clay, and gravel.

The City of Carson is situated in the northern part of the physiographic basin known as the Los Angeles Basin, or the Coastal Plain of Los Angeles. The most prominent landform within the City is the Dominguez Hills, which represents the central portion of the Newport-Inglewood fault zone (or uplift). In addition, the Dominguez Gap is another important landform feature within the City.

Dominguez Hills. The Dominguez Hills lie immediately west of the Alameda Street corridor, between the Redondo Beach/Artesia Freeway (SR-91) on the north and Del Amo Boulevard on the south. The Dominguez Hills are a feature consisting of an elliptical, northwest trending anticlinal dome that ranges in elevation from approximately 20 feet above mean sea level (msl) to 195 feet msl.

Dominguez Gap. The Dominguez Gap constitutes a portion of the Downey Plain lying between the Dominguez Hills and the northwestern extension of Signal Hill. The gap is approximately 1.6 miles wide at its narrowest point and approximately seven miles long. It was entrenched mainly by the ancestral San Gabriel River, which has a southward flowing ancestral Los Angeles River as a tributary. An estimated 150 feet of Holocene materials has been deposited within the Dominguez Gap.

Mineral Resources

Carson is located in the Los Angeles Basin, a major oil-producing district in Southern California. The City is located within the Wilmington and Dominguez oil fields. Oil was first discovered in the basin in 1889, and many active oil wells exist today within the City.

Soils

Soils within Carson are variable, ranging from sand to clay loam soil types. Table SAF-1, *General Physical Properties of Soils in the Carson Area*, which is based on information from the Los Angeles Soil Survey (USSCS, 1969) general soils map, indicates the general properties of soil associations that underlay Carson. According to the standards set by the Soil Conservation Service of the U.S. Department of Agriculture (USSCS), no prime agricultural soils exist within the City of Carson.



**Table SAF-1
General Physical Properties of Soils in the Carson Area**

Association Number	Soil Association	Soil Type	Depth (inches)	Slope (%)	Erosion Potential	Shrink-Swell Potential
10	Oceano	Sand	60"	2-5	Mod-High	Low
13	Netz-Cortina	Fine sand and fine sandy loam	60"	0-5	Low-Mod	Low
14	Hanford	Sandy loam	60"	2-5	Low	Low
15	Yolo	Silty loam	60"	0	Low-Mod	Mod
20	Chino (with inclusions of the Foster and Grangeville Associations)	Clay loam	60"	0	Low	Mod
21	Ramona-Placentia	Sandy loam	18-60"	2-5	Low-Mod	High

Source: U.S. Soil Conservation Service, 1969.

Geotechnical Constraints

Differential Settlement. A major geotechnical consideration for development in the City of Carson is differential settlement. Differential settlement occurs when loose, cohesionless sandy sediments consolidate or compact under the load of an overlying static mass, such as a building. Clayey soils, generally cohesive, typically do not consolidate under loads as much as cohesionless soils. Differential settlement is related to dynamic settlement but differs in that it occurs under static loading, and not as a result of shaking or seismic loading. Given the lateral and vertical variation of the alluvial soils underlying Carson, differential settlement could occur in areas thought to have a low susceptibility to settlement.

Differential settlement may also occur within the 14 former landfills in the City. Areas where such activities have occurred may be subject to the generation of organic gases associated with decomposition, and possibly experience differential settlement as portions of the ground surface collapse inward.

Subsidence. As previously mentioned, the Dominguez and Wilmington oil fields are located within the City. There is no documented ground subsidence associated with the Dominguez oil field. However, the historic withdrawal of oil has been known to cause subsidence in portions of the Wilmington oil field. By the early 1980s, subsidence at the oil fields had been mitigated and was no longer occurring.⁴

⁴ Source: *City of Carson Safety Element*, 1981.



Shallow or Perched Groundwater. Shallow or perched groundwater can also cause problems when designing multi-story buildings or underground facilities, such as parking lots or storage tanks. Construction of underground facilities usually requires excavating near vertical walls of earth. Shallow groundwater conditions combined with loose unconsolidated sediments tend to make these types of excavations unstable, requiring special construction techniques to insure the safety of workers. Also of concern is the additional pressure that the groundwater adds against subterranean walls. Special drainage systems have to be designed to help reduce the additional pressure and to prevent flooding. In addition, leaking of underground storage tanks can cause contamination of the underlying regional water table. Groundwater within the City of Carson occurs at a depth of approximately 30 feet below ground surface (bgs) to 70 feet bgs.⁵

Slope Instability/Landslides. Due to the relative absence of significant elevation changes in the City, slope instability in Carson is limited to the slopes adjacent to the flood control channels that intersect the City. The loose unconsolidated nature of the sediments, exposed in slopes that are not faced with concrete may cause the slopes to be surficially unstable.

Shrink/Swell Potential. The shrink/swell characteristics of soils also present a geotechnical constraint within the City. Soils with a high clay content typically have high shrink/swell characteristics. Shrinking and swelling of soil can cause overlying concrete to crack and settle. Refer to Table SAF-1, which cites the general characteristics of soils in the City.

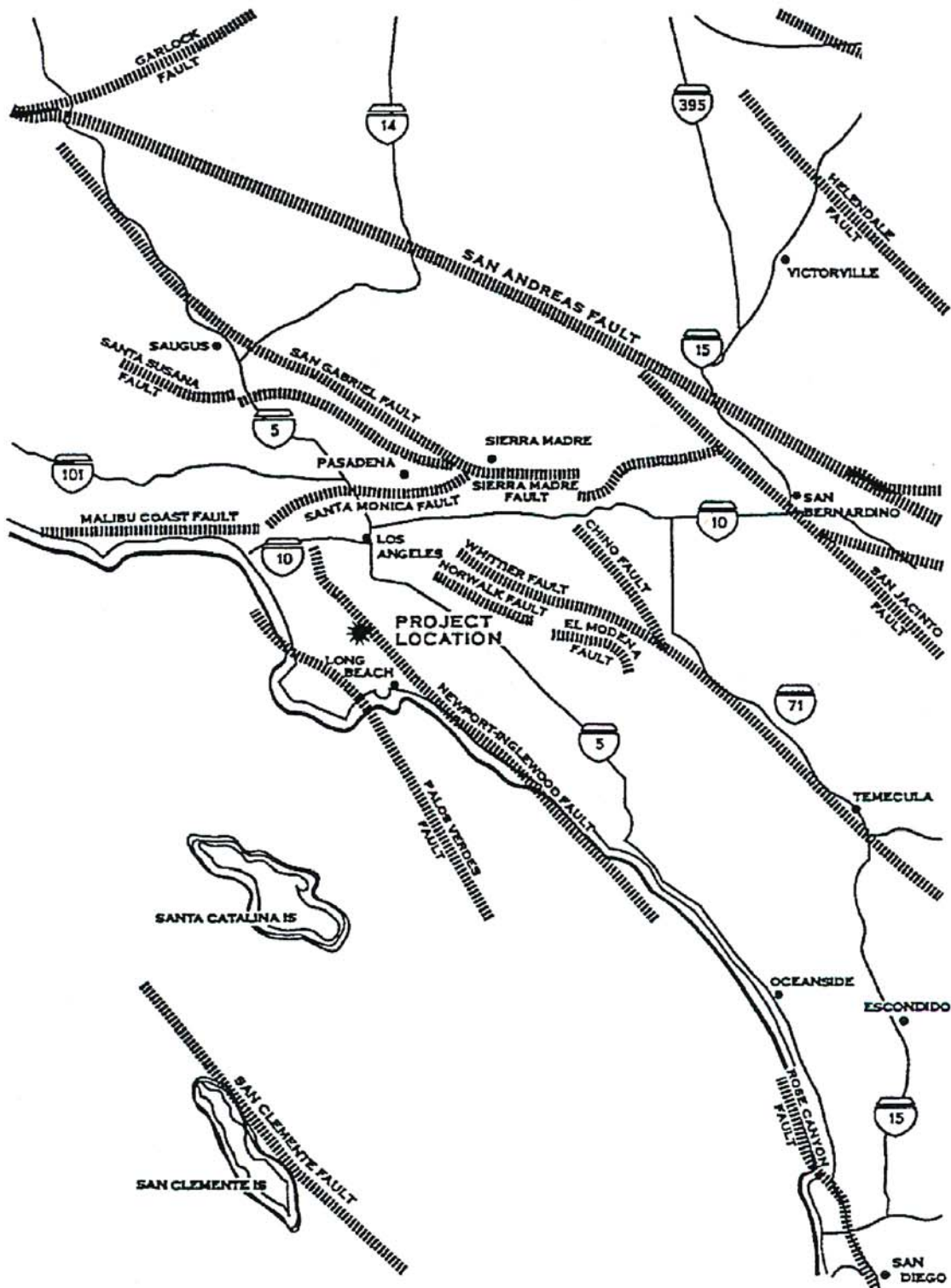
SEISMICITY

Earthquakes occur frequently in Southern California, and particularly in the Los Angeles Basin, where numerous faults accommodate the complex tectonic stresses caused by the convergence of the North American and Pacific Plates.

Seismic activity of a fault is measured by the frequency and magnitude of past earthquakes associated with that fault. An active fault is a fault that exhibits movement or shows evidence of movement within the last 11,000 years. A potentially active fault is a fault that has exhibited evidence of movement within the last two million years. The better known seismically active faults in Southern California are shown on Exhibit SAF-3, *Regional Fault Map*.

The intensity of earthquakes is measured, or expressed, in terms of two scales. One, the Richter scale, measures the strength of an earthquake, or the strain energy released, as determined by seismographic observations. The second, the Mercalli Intensity Scale, describes the intensity in terms of observable impacts. See Table 3.4-4 in the *Existing Conditions Report*. Historical records indicate that the faults described below are considered active and capable of generating earthquakes that could affect the City.

⁵ *Annual Survey and Report of Groundwater Replenishment*, Water Replenishment District of California, Plate 2, 1998.





Newport-Inglewood Fault Zone. The Newport-Inglewood fault extends from the southern edge of the Santa Monica Mountains southeastward to an area offshore of Newport Beach. This zone, commonly referred to as the Newport-Inglewood uplift zone, can be traced at the surface by following a line of geomorphically young anticlinal hills and mesas. These hills and mesas include the Baldwin Hills, Dominguez Hills, Signal Hill, Huntington Beach Mesa and Newport Mesa. Recent earthquake focal mechanisms for 39 small earthquakes (1977 to 1985) show faulting along the north segment (north of Dominguez Hills) and along the south segment (south of Dominguez Hills to Newport Beach). The 1933 Long Beach earthquake has been attributed to movement on the Newport-Inglewood fault zone. Based on historic earthquakes, the fault zone is considered active. The Newport-Inglewood fault zone is considered capable of generating a maximum credible earthquake of a magnitude 7.0 on the Richter Scale. The Cherry Hill branch of the Newport-Inglewood fault zone traverses the City in the area of Dominguez Gap just to the north of Del Amo Boulevard. Movement along the fault is northeast side up, resulting in vertical displacement of waterbearing sediments extending for several miles. It was previously designated as an Earthquake Fault Zone but was removed by the State prior to 1986.

Avalon-Compton Fault Zone. The Avalon-Compton Fault zone, which is part of the Newport-Inglewood Fault Zone, is the only active fault located in the City of Carson. The Avalon-Compton fault is located immediately east of Avalon Boulevard and north of the Redondo Beach/Artesia Freeway. Historically, the Avalon-Compton fault/Regional Shear Zone has moderate to high seismic activity with numerous earthquakes greater than Richter magnitude four.

San Andreas Fault Zone. The San Andreas fault zone is California's most prominent structural feature, trending in a general northwest direction for almost the entire length of the state. The southern segment is approximately 280 miles long. It extends from the Mexican border into the transverse ranges west of Tejon Pass. Along this segment, there is no single traceable fault line; rather, the fault is composed of several branches. The fault is considered capable of generating a maximum credible earthquake of magnitude 8.25 on the Richter Scale.

Palos Verdes Fault Zone. The Palos Verdes fault zone is located southwest of the City and is traceable in the subsurface along the northern front of the Palos Verdes Hills. Offshore data, consisting of acoustic and reflection profiles, suggests very recent movement along the Palos Verdes Fault.

Whittier Fault Zone (Elysian Park Structure). The 1987 Whittier Narrows earthquake (Richter magnitude 5.9) has been attributed to subsurface thrust faults (a low angle reverse fault) that are reflected at the earth's surface by a west-northwest trending anticline known as the Elysian Park Anticline, or the Elysian Park structure. The subsurface faults that create the structure are not exposed at the surface, and do not present a potential surface rupture hazard. However, as demonstrated by the 1987 earthquake and two smaller earthquakes on June 12, 1989, the faults are a source of future seismic activity. As such, the structure should be considered an active feature capable of generating future earthquakes.



Santa Monica Fault Zone. The Santa Monica Fault is an east-west trending left reverse fault that extends approximately 24 kilometers within the immediate vicinity of Pacific Palisades, Westwood, Beverly Hills and Santa Monica. Annual slip rate is estimated between 0.27 mm and 0.39 mm per year along the fault. The Santa Monica Fault has the capability to generate between a 6.0 to 7.0 Richter magnitude earthquake.

Seismic Hazards

Ground Shaking. The effects of ground shaking in Carson will vary considerably depending on the distance of the seismic source to the City and the duration of strong vibratory motion. In general, long-period seismic waves, characteristic of earthquakes that occur approximately nine miles or more from the area of concern, interact with and damage structures such as high-rise buildings, bridges, and freeway overpasses. Short period waves, however, are generally very destructive near the epicenter of moderate- and large-magnitude seismic events, causing severe damage predominately to low-rise rigid structures (less than three stories) not specifically designed to resist them.

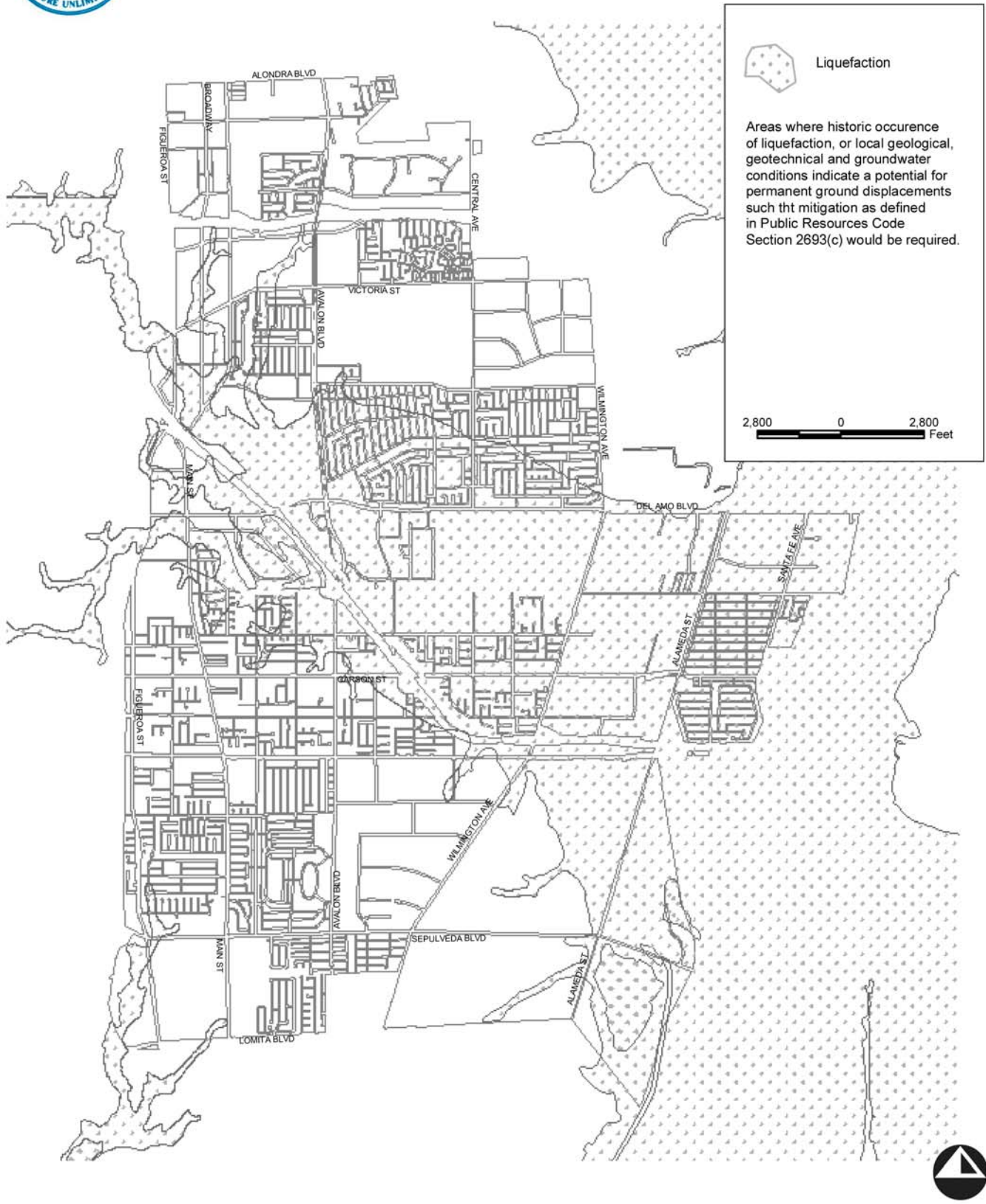
Detectable ground shaking within the City of Carson could be caused by any of the active or potential active faults shown on (Exhibit SAF-3, Regional Fault Map). The Newport-Inglewood, Whittier, Santa Monica, and Palos Verdes Faults are the active faults most likely to cause high ground accelerations in the City. The San Andreas Fault has the highest probability of generating a maximum credible earthquake in California within the next thirty years. The anticipated “Big One”, with a magnitude ranging between 7.5 and 8.0 is thought to be capable of seismic intensity values of about IV to V on the Modified Mercalli (MM) Scale. Such an event would have an expected shaking duration of 35 to 50 seconds.

As previously described above, the central and southeastern portions of the City are underlain by alluvial deposits; the northern, western and southern portions of the City are underlain by Quaternary non-marine terrace deposits. Because of the area’s unstable sub-base of sandy soil, Carson (as well as the entire South Bay area) is regarded as one of the most severe shock areas in the Los Angeles area.

Ground Failure

Seismically induced ground failure as discussed in this section includes liquefaction, differential compaction, ground lurching, ground cracking and earthquake induced slope failures.

Liquefaction. Liquefaction is a process by which water-saturated granular soils transform from a solid to a liquid state because of a sudden shock or strain. Basic conditions necessary for liquefaction to take place are soil conditions conducive to liquefaction, saturation or these materials by water, and a source of shaking. The Newport-Inglewood fault zone is a potential source of ground stress, and liquefaction could occur in the City of Carson if the ground water table were high enough during an earthquake. Due to existing conditions in the City, particularly in the alluvial and former slough areas, there is the possibility that liquefaction could



Source: State of California Seismic Hazard Zones Maps: Inglewood Quadrangle, Long Beach Quadrangle, Southgate Quadrangle and Torrance Quadrangle, March 25, 1999; Special Studies Zones, Torrance Quadrangle, July 1, 1986. OCTOBER 22, 2002

Seismic Hazards

EXHIBIT SAF-4



impact buildings and/or other structures in the event of an earthquake. Exhibit SAF-4, *Seismic Hazards*, shows the areas in the City which have shown historical occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements. Liquefaction can result in the shifting of foundations, settling of roadways and rupture of underground pipelines and cables. Buildings and other objects on the ground surface can settle, tilt and collapse as the foundations beneath them lose support, and lightweight buried structures may float to the surface. A significant portion of the City has been designated as potential liquefaction area and geotechnical investigation reports are required as part of the environmental and building permit processes for most development within these areas.

Differential Compaction or Settlement. Differential compaction resulting from earthquake ground shaking is potentially damaging to structures and buried utilities and services. Differential settlement may occur in cohesionless sediments where differences in densities in adjacent materials lead to different degrees of compaction during ground shaking. In the case of saturated cohesionless sediments, post earthquake settlement may occur when excess pore-water pressures generated by the earthquake dissipate. Given the lateral and vertical variation of the alluvial soils underlying Carson, differential settlement could occur as a result of an earthquake in areas thought to have a low susceptibility to settlement. Whereas differential settlement is a potential hazard in Carson, the significance of the hazard at any particular site may only be determined by soils investigations.

Ground Cracking, Ground Lurching and Lateral Spreading. Both ground cracking and lurching are secondary features resulting from strong to moderately strong ground shaking and may be associated with liquefaction. Ground cracking usually occurs in near-surface materials, reflecting differential compaction or liquefaction of underlying materials. The potential for ground cracking exists especially in those areas of the City that have a moderate to high potential for liquefaction.

Ground lurching results when soft, water-saturated surface soils are thrown into undulatory motion. Areas within Carson occur in those regions indicated on Exhibit SAF-4, *Seismic Hazards*, that have a high potential for liquefaction.

Lateral spreading (a form of landsliding) is referred to as limited displacement ground failure, often associated with liquefaction. Compact surface materials may slide on a liquefied, or low shear strength layer at a shallow depth, moving laterally several feet down slopes of less than two degrees. Such a condition may be present where conditions conducive to shallow liquefaction exist.

Surface Faulting. Surface faulting, rupture of the ground surface along a causative fault trace, is associated with the primary movement that produced the seismic event and should not be confused with secondary ground cracking which is simply a result of ground shaking and may occur at some distance from the causative fault. The likelihood of surface rupture on a given fault can be determined principally studying the seismic history of the fault and reviewing geologic evidence which suggests historic or prehistoric surface rupture. Many past studies have shown that future



surface faulting is most likely to occur where the trace ruptured last, especially if there is evidence of repeated and significant displacement on the trace.

The only active fault within the City limits is the Avalon-Compton structural zone, which is part of the Newport-Inglewood Fault Zone. Although the Newport-Inglewood structural zone is seismically active, surface faulting does not appear to be a significant potential hazard. It is shown on Exhibit SAF 4, *Seismic Hazards*.

Seismically Induced Water Waves. Seismically induced water waves include tsunamis, seiches and waves generated by failure of retaining structures. Tsunamis are generated by earthquake-induced subsea dislocations or landslides which cause large volumes of water to move in the form of ocean waves. Coastline configuration and tidal influx may cause local amplifying effects. A seiche is a low amplitude wave generated in a restrictive body of water due to earthquake motions.

Due to the distance of the City to the Pacific Ocean, the potential for tsunami effects within the City is negligible. The absence of any large bodies of water within Carson preclude the possibility of damage from seiche effects. This could change should lakes or large reservoirs be constructed within the City.

3.2.2 MAN-MADE HAZARDS

HAZARDOUS MATERIALS

The State of California defines a hazardous material as a substance that is toxic, ignitable or flammable, or reactive and/or corrosive. An extremely hazardous material is defined as a substance that shows high acute or chronic toxicity, carcinogenicity, bio-accumulative properties, persistence in the environment, or is water reactive (California Code of Regulations, Title 22). "Hazardous waste," a subset of hazardous materials, is material that is to be abandoned, discarded, or recycled, and includes chemical, radioactive, and biohazardous waste (including medical waste).

Setting

The City of Carson has a relatively long history of urban use, including industrial, commercial, and oil field development dating back to the early 1920s. Many of these uses have involved the use, storage, and/or generation of hazardous materials that were and continue to be required for even the most routine industrial and manufacturing processes. As a result of this long history of industrial and commercial development, and the fact that waste management practices and regulations were either not in place or not up to current standards, there are several sites within the City that have the potential to have been impacted by previous releases of contaminated materials.

Since the 1980s, hazardous materials have been governed by a variety of environmental regulations that require proper storage, handling, employee and public noticing, spill contingency planning, business/environmental management



plans, and other emergency response measures necessary to ensure public safety and to minimize the risk of accidental releases or environmental impacts. While it is less likely for newer uses to have involved hazardous materials releases, the potential for accidental releases, while minimized under current regulations, is inherent to industrial areas.

The increasing volume and variety of hazardous materials that are generated, stored, or transported within the City of Carson is a problem of great concern to public officials and the community. A number of freight trains traverses the City, hauling various types of hazardous and explosive materials including chlorine gas, and low pressure natural gas (LPG). Several fixed-site industrial firms require the use of potentially hazardous materials to operate their businesses. Finally, there are numerous underground pipelines within the City limits that carry flammable and hazardous liquids.

Hazardous Waste Management

Regulation of hazardous wastes is provided on the Federal, State and local levels. The United States Environmental Protection Agency (EPA) and the California Department of Toxic Substance Control (DTSC) have developed and continue to update lists of hazardous waste subject to regulation. The South Coast Air Quality Management District (SCAQMD) works with the California Air Resources Board (CARB) and is responsible for developing and implementing rules and regulations regarding air toxins on a local level. The SCAQMD establishes permitting requirements, inspects emission sources, and enforces measures through educational programs and/or fines.

In response to the growing Statewide concern of hazardous waste management in the 1970s and 1980s, State Assembly Bill 2948 (Tanner 1986) enacted legislation authorizing local governments to develop comprehensive hazardous waste management plans. The intent of each plan is to assure that adequate treatment and disposal capacity is available to manage the hazardous wastes generated within its jurisdiction. In 1988, Los Angeles County adopted the Los Angeles County Hazardous Waste Management Plan, which was subsequently approved by the State Department of Health Services. The City of Carson subsequently adopted the Plan. The Los Angeles County Hazardous Waste Management Plan provides policy direction and action programs to address current and future hazardous waste management issues that require local responsibility and involvement in Los Angeles County. In addition, the Plan discusses hazardous waste issues, and analyzes current and future waste generation in the incorporated cities, County, and State and Federal lands.

In May 1982, the Los Angeles County Board of Supervisors established the Hazardous Materials Control Program in the Department of Health Services. Originally, the program focused on the inspection of hazardous waste generating businesses, but has since expanded to include hazardous materials inspections, criminal investigations, site mitigation oversight and emergency response operations. On July 1, 1991, the program was transferred to the Los Angeles County Fire Department and its name changed to Health Hazards Division.



Household Hazardous Waste Element

Adopted in January 1992, the City Household Hazardous Waste Element describes existing and future programs to reduce household hazardous waste (HHW). The Element seeks to provide safe and convenient means to dispose of HHWs, increase recycling and reuse of HHWs, increase education about HHWs to decrease dependency and usage of HHWs, and methods to monitor and enforce regulatory requirements concerning HHW management.

Disclosure of Hazardous Materials

All businesses that handle more than a specified amount of hazardous materials are required by both the Federal and State governments to submit a business plan to their local administering agency. The quantities for acutely hazardous materials vary according to the substance. In the City of Carson, the administering agency is the Los Angeles County Fire Department. Every handler is required to submit a business plan and an inventory of hazardous substances and acutely hazardous materials to the Fire Department on an annual basis. If the hazardous materials inventory of a business should change, a revised business plan must be submitted. Inspectors from the Los Angeles County Fire Department conduct annual inspections of businesses that have submitted a business plan; they also conduct follow-up inspections as needed.

Significant concentrations of hazardous materials, at levels for which a business plan is required, are generally associated with manufacturing and industrial areas. It should be noted, however, that hazardous materials are also used and stored in commercial and residential areas.

Business and industrial facilities located outside the City limits also may have the potential of causing a hazardous materials release incident that could impact Carson. Hazardous materials stored in warehouses or in refineries have the potential of being released as toxic fumes during an earthquake or fire. The areas of the City that could be impacted by a toxic fume are in part dependent upon wind direction and other climatological controls. However, because of the risk, facilities that store hazardous materials that could pose a toxic-fume threat should not be located near predominantly residential neighborhoods and/or facilities that house immobile populations (i.e., schools, child care centers, convalescent homes, etc.).

HAZARDOUS MATERIALS AND TOXICS IN CARSON

Waste Generators

There are approximately 324 businesses in the City of Carson that handle hazardous materials and have a business plan on file or pending with the County of Los Angeles Fire Department. As of March 1999, 43 of these businesses handle acutely, or highly hazardous materials. A significant portion of these generators are associated with the petroleum industry. Other contributors to hazardous waste in the City include small quantity generators (SQGs). SQGs refer to generators of less than 1,000 kilograms (kg) of hazardous waste per month, such as gas stations,



automotive repair shops, dry cleaners, and photo finishers. A small percentage of the City's hazardous waste is classified as "household hazardous waste," which includes waste associated with painting, automobiles, cleaning solvents, and pesticides used for gardening.

There are 16 businesses in the City and immediately surrounding unincorporated area that have Risk Management Plans (RMPs), in compliance with California's Accidental Release Program, on file with the Los Angeles County Fire Department's Hazardous Materials Disclosure Program. This program is intended to manage those materials classified as acutely hazardous materials. The list of businesses that have a RMP is currently being updated. In addition, the City of Carson contains numerous regulatory program sites (Fee Groups 03-05). Refer to Exhibit 3.7-1, Sites with Regulatory Programs, and Table 3.7-1, City of Carson Regulatory Fee Groups, in the *Existing Conditions Report*.

Illegal Dumping

Clandestine dumping, the criminal act of disposing of toxic material and hazardous waste on public or private property, can trigger a hazardous material incident. As the costs and restrictions increase for legitimate hazardous waste disposal sites, it can be anticipated that illegal dumping of hazardous materials will increase proportionately.

Transport of Hazardous Materials

In addition to stationary land uses that have the potential to involve hazardous materials releases, major transportation corridors are also a potential source of accidental releases or environmental incidents that could affect various areas of the City. Heavy truck traffic travels on the Harbor (I-110), Redondo Beach/Artesia (SR-91), San Diego (I-405), and Long Beach (I-710) Freeways each day. In addition, arterial streets, including the Alameda Corridor, are also a potential source of accidental releases of hazardous materials in the event of an accident. Trucks carrying hazardous materials in support of local and regional industry and commerce regularly use these transportation routes. One or more of every 10 commercial vehicles usually carries hazardous materials. In addition, hazardous materials are often transported through the eastern portion of the City by rail lines. The Los Angeles County Fire Department responds to all hazardous materials incidents within the City, including those along the railways. The California Highway Patrol is in charge of abating spills that occur on the freeway, with the local police and fire departments and Caltrans responsible for additional enforcement and routing assistance.

Oil and Gas Well Inventory

For the purposes of this Element, an oil well is defined as a hole drilled from the surface into the earth for prospecting for, or production of oil, natural gas, or other hydrocarbon substances. This definition also encompasses a well or a hole used for the subsurface injection into the earth of oil field waste, gases, water, or liquid substances, including any well or hole that has not been abandoned and is now in



existence. The depth of an oil or gas well can range from a few hundred feet below ground surface (bgs) to more than 20,000 bgs.

As previously mentioned, portions of the City of Carson are located within the Dominguez and Wilmington oil fields. According to the *1998 Preliminary Report of California Oil and Gas Production Statistics*, dated January 1999, the Dominguez Oil Field produced approximately 237,000 barrels of oil and the on-shore oil production portion of the Wilmington Oil Field produced approximately 4,400,000 barrels of oil. See Table 3.7-4, Oil and Gas Well Inventory, in the *Existing Conditions Report*.

Oil Production Hazards

Gas Migration. Development within an oil field could result in construction of structures over abandoned wells. If the wells are leaking, methane and hydrogen sulfide gas could migrate upward and could accumulate beneath developed areas where concrete and asphalt surfaces prevent the natural migration of the methane gas to the atmosphere. Migration of gas through cracks in concrete foundations into the interior of structures could create the potential for an explosion or fire.

Soil Contamination. Oil contaminated soil is known to occur in oil fields particularly adjacent to oil wells. Unrefined oil contains a variety of hazardous constituents, including polyaromatic hydrocarbons (PAH), which are carcinogens, benzene, toluene, xylene, ethylbenzene and heavy metals; however, it should be noted that all oil-contaminated soil is considered hazardous under Federal and State standards. Due to the historic drilling activities within the City, contaminated soils may exist in the City.

Blowouts. Blowout prevention devices are generally used by well operators whenever oil wells are being drilled or reworked. However, improper installation or faulty devices could potentially create a blowout at a drilling facility.

Pipelines

There are several crude oil and petroleum product pipelines that transect the City. Several petroleum handlers (i.e., Equilon, Tosco, a portion of the Texaco Refinery, and Arco which was acquired by BP, British Petroleum) are located within the City. The Southern Pacific Pipeline transports an unlimited amount of various products through the City from several locations (refer to Appendix C, Hazardous Materials, in the *Existing Conditions Report*). If one of these pipes is broken, the local fire department is responsible for contacting the operator of the damaged pipeline and, in the case of fire or explosion, for fire suppression. The Los Angeles County Fire Department has the emergency, 24-hour telephone numbers of the operators of the hazardous pipelines that transect the City (refer to Hazardous Materials Incidence Response, and Exhibit 3.7-3, Los Angeles Basin Call Wheel, in the *Existing Conditions Report*). In addition, the Fire Department has to report any pipe rupture, fire, or explosion to the State Office of Emergency Services. Although a release of crude oil and/or refined petroleum product would not pose as immediate a threat to the City residents as a toxic cloud would, the long-term environmental impacts of such an incident can be serious and costly. For example, if spilled crude



oil and/or refined product leak into the ground, the shallow ground water could be contaminated, requiring ground water clean-up or remediation.

Superfund Sites

A search of the EPA's database of Superfund Sites revealed a total eight hazardous waste sites in Carson; however, none of the sites has been placed on the National Priorities List.⁶ The search query results can be found in Appendix C, of the *Existing Conditions Report*.

Underground Storage Tank Leaks

Based on a review of the California Environmental Protection Agency (EPA), Hazardous Waste and Substance Sites (CORTESE) list, and the State Water Resources Control Board list of Releases of Hazardous Substances from Underground Storage Tanks (USTs), in 1999, at least 72 Leaking Underground Storage Tanks (LUSTs) had been reported in Carson. Of these, approximately 18 cases currently have remedial activities underway, while further site assessment/investigation activities are reported for the remaining 54 LUST sites. Refer to Table 3.7-2 and Appendix C in the *Existing Conditions Report*.

Closed and Inactive Landfills

In addition to commercial and industrial uses within the City of Carson, several solid waste landfills have been documented to exist in the area. The 1988 Federal Comprehensive Environmental Response, Compensation and Liability Act Information System (CERCLIS) list potentially hazardous waste sites included 14 sites within the City that were investigated by the EPA. The CERCLIS inventory lists sites that have been identified as having a potential for releasing hazardous substances into the environment (refer to Appendix C of the *Existing Conditions Report*). According to information provided by VISTA Information Solutions, Inc., there are no Federal National Priorities List (NPL) sites within the City. However, these 14 sites are currently being reviewed/ assessed for possible inclusions on the NPL.

The composition of waste materials disposed of in several of these facilities is not well known and many of these facilities are undergoing site investigation and/or monitoring for contaminant constituents, including the generation of methane gas associated with waste decomposition.

The City currently has 14 inactive sanitary landfills and no active landfills. Although none of these landfills currently accepts materials that decompose chemically or biologically, some of these sites had previous organic landfill activity and may be subject to decomposition and the production of landfill gases. Any future development proposed on or near these sites should be carefully studied and a landfill gas control plan and monitoring system may be required for safety. Other

⁶ Source: <http://www.epa.gov/superfund>. November 16, 2001.



sites will probably not produce landfill gases since they contain non-water soluble, non-decomposable inert solids.

HAZARDOUS MATERIALS RESPONSE

The City of Carson recognizes that the presence of hazardous materials associated with industrial activities poses unique dangers to the health and welfare of the citizens of Carson. In order to efficiently manage hazardous materials emergencies and to minimize their effects, the City of Carson and assisting agencies have developed a comprehensive Hazardous Material Response Plan. The Los Angeles County Fire Department is responsible for responding to hazardous material release incidents in Carson. The Los Angeles County Fire Department is not a part of a Joint Powers Authority (JPA); however, it is a member of a Certified Unified Program Agency (CUPA), which conducts inspections of businesses, manages and reviews various hazardous waste permits for business plans, and oversees cleanups.⁷ First response to all hazardous materials incidents within the City is conducted by the Los Angeles County Fire Department.

There are six primary fire stations that provide fire and emergency medical service to the City of Carson, four of which are located within the corporate boundaries (refer to Section 3.9, Public Services, in the *Existing Conditions Report* for the location of these fire stations). In Carson, all of the businesses that store acutely hazardous substances are located within 1.5 miles of a Los Angeles County Fire Station. Average response time for a hazardous materials release in the City is the same as for a fire, approximately five minutes.

Los Angeles Basin Call Wheel

In addition to the Los Angeles County Fire Department, an industry developed and maintained “Call Wheel” notification system has been prepared for pipeline leak notification to petroleum companies within the Los Angeles Basin, as shown on Exhibit, 3.7-3, Los Angeles Basin Call Wheel, in the *Existing Conditions Report*. The purpose of the “Call Wheel” is for leak information notification to those companies on the Call Wheel, who may be the parties responsible for the leak.

3.2.3 AIR TRAFFIC, RAIL LINE AND TRUCKING HAZARDS

AIRCRAFT OVERFLIGHT HAZARDS

Aircraft originating and departing from a number of airports located within Southern California heavily occupy the skies over Carson. The airports nearest to Carson that handle the greatest amount of air traffic are described below.

- Los Angeles International Airport (LAX). It is the fourth busiest airport in the world and in 2001 served 61.6 million annual passengers. Planes arrive

⁷ Telephone interview with Battalion Chief John Tucker of the Los Angeles County Fire Department on March 17, 1999.



and depart at a rate of one per minute. This airport is located 12.7 miles northwest of the City of Carson.

- Long Beach Airport. In 1995, the Long Beach Airport served 400,000 passengers. Planes arrive and depart at a rate of 1.5 every two minutes. This airport is located 13 miles southeast of the City of Carson.
- John Wayne Airport. It is ranked tenth nationally in terms of air traffic and served 7.8 million annual passengers in 2000. This airport is located approximately 23 miles southeast of Carson.
- Ontario Airport. In 2001, 6.7 million annual passengers were served at the Ontario Airport, which is experiencing a three percent growth rate that is projected to continue. This airport is located 70 miles east of the City of Carson.
- Burbank Airport. In 2001, 5 million annual passengers were served at this airport. This airport is located approximately 26 miles north of Carson.

Aircraft flying over Carson are located in the Los Angeles Terminal Control Area (TCA). The TCA is airspace restricted to large, commercial airliners. Each TCA has an established maximum and minimum altitude in which a large aircraft must travel. Smaller aircraft desiring to transit the TCA may do so by obtaining Air Traffic Control clearance. The aircraft may then proceed to transit when traffic conditions permit. Aircraft departing from other than LAX, whose route of flight would penetrate the TCA, are required to give this information to Air Traffic Control on appropriate frequencies. Pilots operating small aircraft often rely on landmarks, rather than charts, to indicate their locations. If a pilot is unfamiliar with the geographical landmarks within the Southern California Basin, he/she could inadvertently enter the restricted TCA airspace. This misunderstanding could result in a mid-air collision.

Two busy general aviation airports are also located near the City—Compton and Torrance Airports—and accidents have occurred from aircraft using these airports.

Train Derailment

The City of Carson is served by three railroads. All are transcontinental systems: Union Pacific, Southern Pacific and Santa Fe. Thus, virtually every industry and business is on a direct transcontinental rail line. The Union Pacific runs along the eastern section of the City, as it converges onto the Los Angeles City container transfer facility, which borders the west side of Long Beach. The Southern Pacific runs along the central, southern and eastern section of the City. The Santa Fe extends into the eastern section of the City.

In addition to the rail lines that serve business and industrial uses, the Metro Blue Line light rail traverses the City. The Metro Blue Line, part of the Metro Rail system, operates as part of the multimodal transportation system developed by the Los Angeles County Transportation Authority (LACTA). The Metro Blue Line is



operated by the Metropolitan Transportation Authority (MTA). The Blue Line runs through the eastern portion of the City. In the event of a major earthquake, segments of the line from the Long Beach to the Del Amo passenger station and from the Artesia passenger station to the Slauson passenger station, as well as segments of the line from the Slauson to the 7th and Flower station are expected to sustain serious damage. There are also off-system hazards that may impact the system, including facilities that store or process hazardous materials, high voltage lines, petroleum pipelines and natural gas mains.

Public safety hazards typically associated with train operations can be broken down into two groups: 1) accidents associated with population exposure to rail operations (primarily pedestrian and vehicular accidents involving trains) and 2) accidents involving the trains themselves (i.e., derailments). A major train derailment could encompass many threats, such as hazardous materials incident, fire, and severe damage to either adjacent buildings or vehicles, and the loss of life to pedestrians and those in adjacent buildings or vehicles. (For locations of railroad lines within the City of Carson, please refer to Section 3.2, Circulation, of the *Existing Conditions Report*.)

Trucking Hazards

A major truck incident could encompass many threats, such as a hazardous materials incident, fire, severe damage to either buildings or vehicles, and loss of life to pedestrians or those in buildings or vehicles. Carson is served by four major freeways, several major north-south/east-west truck routes, and contains 29 truck parking zones. See Exhibit 3.2-5, Truck Routes and Truck Parking Zones in the *Existing Conditions Report* and additional discussion in Chapter 3, Transportation and Infrastructure Element.

3.2.4 CRIME, FIRE AND MEDICAL EMERGENCIES

POLICE PROTECTION SERVICES

Police services are provided by the Los Angeles County Sheriff's Department. There is one existing Carson Sheriff Station, located at 21356 South Avalon in Carson, as shown on Exhibit 3.9-1, Existing Fire and Sheriff Stations, located in the *Existing Conditions Report*. In 2002, 187 sworn personnel and 35 civilian personnel operated from this station. There are approximately 2.1 sworn personnel per 1,000 residents and 0.40 civilian personnel per 1,000 residents. A standard of 1.7 officers per 1,000 residents is considered excellent. Within a 24-hour period, there are approximately 31 patrol cars serving the Carson area, divided among three work shifts.

Response Times

Data for response times is divided into three categories: emergent response (a call which requires a code-3 response), immediate response (a call which requires a



prompt non code-3 response), and routine response (a call of a non-emergent nature). Refer to Table SAF-2, Emergency Response Times.

**Table SAF-2
Emergency Response Times**

Type of Response	Month	Daily Average
EMERGENT	May 2002	5.1
	June 2002	4.9
	July 2002	4.3
	Average	4.7
IMMEDIATE	May 2002	7.6
	June 2002	7.1
	July 2002	7.6
	Average	7.4
ROUTINE	May 2002	34.1
	June 2002	36.0
	July 2002	34.9
	Average	35.0

FIRE PROTECTION SERVICES

Fire protection services in the City of Carson are provided by the Los Angeles County Fire Department. There are six primary fire stations that provide both fire and emergency medical service to the City of Carson, with four of the stations located within Carson's boundaries. In addition to the fire stations, there is a Fire Prevention Office located at the Carson City Hall. Each of the primary stations has established an expanded response matrix for its individual jurisdiction, which increases the resources available to help a fire station respond to an emergency. These include additional engine companies, truck companies, paramedic units and hospitals. As 9-1-1 emergency calls are processed, a computer dispatching system selects from this matrix to provide the closest available unit that can meet the emergency need. The Los Angeles County Fire Department operates under the 1996 Uniform Fire Code.

Table SAF-3, Fire Station Response Times for Carson, shows the number of incidents and the average response time for each category of fire calls.



**Table SAF-3
Fire Station Response Times for Carson**

	Number of Incidents	Average Response Time
Emergency Medical Service	1,047	4.7
Fire	81	5.0
Hazardous Materials	78	5.0
Other	377	5.4
Grand Total	1,583	4.9

Paramedic Care

Squads 36 and 116, located within the City of Carson, provide paramedic definitive care. Additional paramedic squads are located in the surrounding area (Lomita, Lawndale, Hawthorne, Lakewood, Paramount and Rolling Hills) to augment coverage in Carson. Three LACFD helicopters are strategically located to provide air ambulance and paramedic service to the area that includes Carson.

Ambulance service for the Carson area is provided by American Medical Response, with units based at East 223rd Street and Lucerne Avenue in Carson.

Emergency Response and Recovery

The City of Carson conducted a hazard analysis study as part of the preparation of its SEMS Multi-Hazard Functional Plan, which is summarized on the following pages. The City of Carson is located within Area E, Los Angeles County (southeast section), Region I, Southern Administrative Region of the State Office of Emergency Services. City staff has been designated to coordinate all State Emergency Management System (SEMS) functions. The City has its own Public Services, Development Services, Administrative Services, and Economic Development departments. The City does not have its own police or fire department, but relies on the County of Los Angeles for the provision of these services. During the response phase, the Carson Sheriff's Station EOC or Watch Commander serves as the coordination and communication point, and the access to the Los Angeles County Operational Area. Following are descriptions of various types of events that could trigger the need for emergency response, in addition to hazardous materials and natural disaster response. These list specific conditions or details related to such events in the City of Carson when applicable.

Civil Unrest. An incident of civil unrest could impact not only the immediate area, but possibly the entire City. Civil unrest can be spurred by specific events, such as large sporting events or criminal trials, or can be the result of long-term disfavor with authority. Civil unrest is usually noted by the fact that normal on-duty police and safety forces cannot adequately deal with the situation until additional resources



can be acquired. The City of Carson has faced civil unrest in various forms since the Watts Riots of 1964. The 1992 Rodney King verdicts caused the most widespread rioting in recent history, with countywide losses of property in the millions.

National Security Emergency. The entire Los Angeles basin is considered a risk area for a nuclear weapons event; therefore, both sheltering and evacuation should be considered. Neither the City nor the County of Los Angeles has the capability to plan for the organized evacuation of the basin; therefore, the extent of planning at this time is restricted to assisting and expediting spontaneous evacuation. In the increased readiness stage, expedient shelters would be utilized as appropriate and information would be provided to the public, but the fallout shelter identification program is no longer maintained or utilized within the State of California. The City of Carson is not within the planned range of a radioactive plume from any nuclear power plants, however, the recent approval of the nuclear storage facility in Nevada, and the transport of radioactive materials to that site increases the potential for this type of event.

Terrorism. Throughout California there is a nearly limitless number of potential targets for terrorist activity, depending on the cause supported by a terrorist or a terrorist group. Some of these targets include: religious facilities, government offices, abortion clinics, public places, schools, power plants, refineries, utility infrastructures, water storage facilities, dams, private homes, prominent individuals, financial institutions, and businesses. In conducting a threat assessment, a variety of situations should be considered: the groups that exist or operate within an area; the structural targets; the significant dates for specific terrorist groups; the potential personal targets; and the special events held in the area.

Any single incident or a combination of events could require evacuation and/or sheltering of the population of Carson.

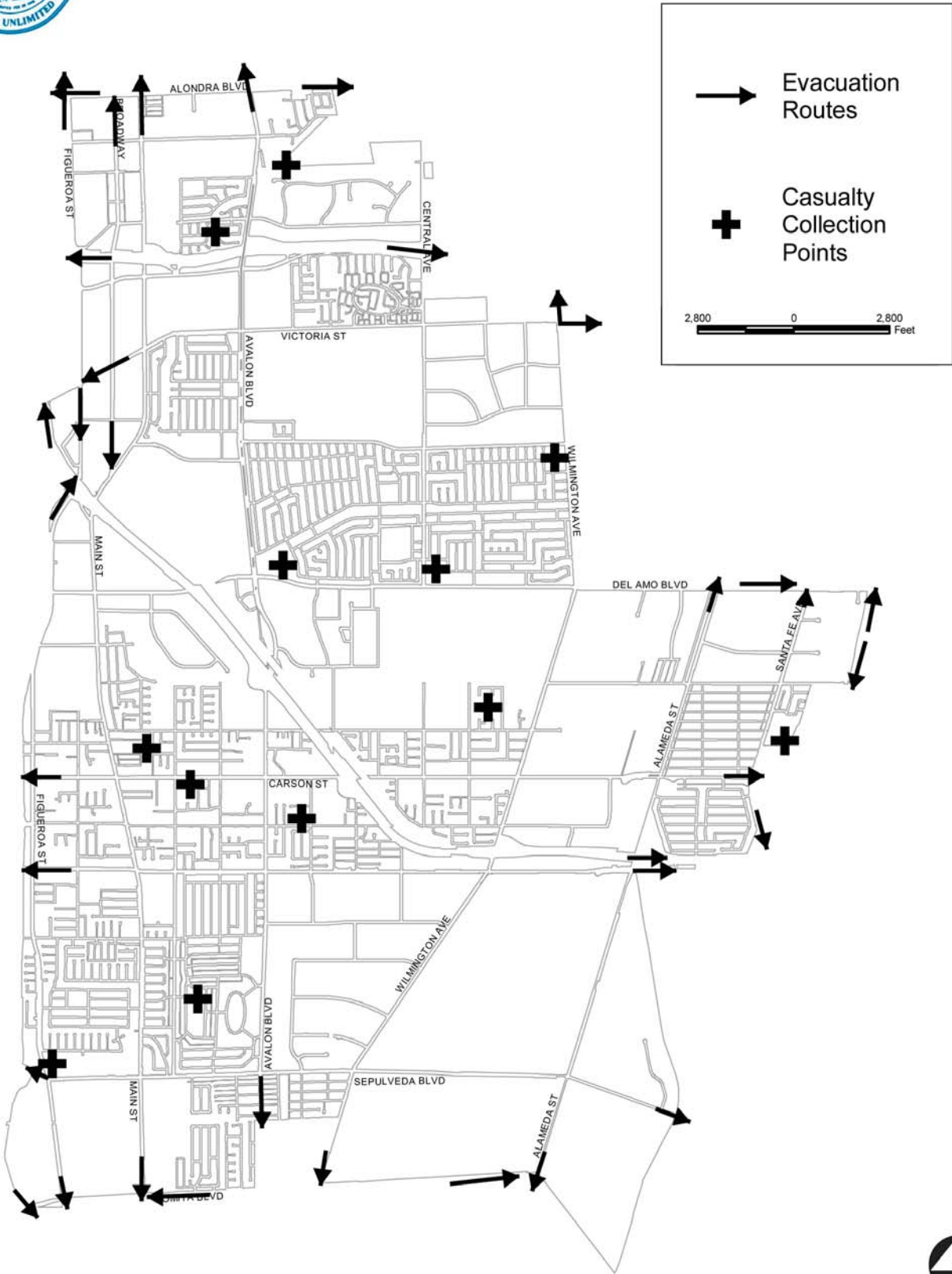
Evacuation Routes

Evacuation, if necessary because of an emergency, would be conducted by the Los Angeles County Sheriff's Department in accordance with the City's Evacuation Plan. Should the City Hall Emergency Operations Center (EOC) not be available because of damage, an alternate EOC would be activated. Alternate EOC and staging sites are as follows: a) City of Carson Facilities and Maintenance Building at 2930 E. Dominguez Street, b) City of Carson City Hall, second floor Executive Conference Room, and c) mobile command vehicle located at Carson Sheriff's Station parking lot.

The City has also created a list of numerous locations within the City of Carson that would be used in case of a disaster or major emergency, referred to as Casualty Collection Points. See Table 3.8-1 in the *Existing Conditions Report*. Exhibit SAF-5, Evacuation Routes/Casualty Collection Points, shows the location of the Points and the evacuation routes for the City.



CARSON GENERAL PLAN



Source: GIS Data, City of Carson, October 2002
OCTOBER 22, 2002

Evacuation Routes/Casualty Collection Points

EXHIBIT SAF-5



4.0 PLANNING ISSUES, GOALS, POLICIES AND IMPLEMENTATION

The acronyms listed below are used for the implementation measures:

RA/D: Responsible Agency/Division
 FS: Funding Source
 TF: Time Frame

ISSUE: PROTECTION IN THE EVENT OF NATURAL DISASTERS

It is important that there is adequate protection from such natural disasters as earthquakes and flooding, and that the City is adequately prepared in the event of an emergency.

Goal: SAF-1: Minimize the risk of injury, loss of life, and property damage caused by earthquake hazards.

Policies: SAF-1.1 Continue to require all new development to comply with the most recent City Building Code seismic design standards.

SAF-1.2 Work with the City's Public Information Office and Public Safety Division to:

- Educate residents in earthquake safety at home,
- Educate the public in self-sufficiency practices necessary after a major earthquake (e.g., alternative water sources, food storage, first aid, family disaster plans, and the like), and
- Identify locations where information is available to the public for planning self-sufficiency.

SAF-1.3 Examine the potential to create a commercial loan program to subsidize the cost of retro-fitting buildings to meet seismic safety regulations. To this end, pursue all sources of state and federal funding in order to retro-fit buildings to meet seismic requirements.

Implementation Measures:

SAF-IM-1.1 Apply City Building Code consistently to all development. *(Implements SAF-1.1)*

RA/D: Building & Safety
FS: Building fees, General Fund
TF: Ongoing

SAF-IM-1.2 Design and complete flyers, website pages, and programs. *(Implements SAF-1.2)*



RA/D: Public Information Office, Public Safety, GIS
FS: General Fund, grants
TF: 2003-05

SAF-IM-1.3 Assign a task force to research feasibility and funding sources for a retro-fit loan program. (*Implements SAF-1.3*)

RA/D: Development Services Administration, Building & Safety
FS: General Fund
TF: 2003-04

Goal: SAF-2: Strive to minimize injury and loss of life, damage to public and private property and infrastructure, and economic and social disruption caused by flood hazards.

Policies: SAF-2.1 Continue to maintain and improve levels of storm drainage service.

SAF-2.2 Continue to work with the appropriate local, State and Federal agencies (i.e., Los Angeles County Department of Public Works, Caltrans, Federal Emergency Management Agency, etc.) to reduce the potential for flood damage in the City of Carson.

SAF-2.3 Ensure that areas experiencing localized flooding problems are targeted for storm drain improvements. To this end, work closely with Los Angeles County Department of Public Works and other cities in the South Bay region to ensure that facilities are adequate to accommodate storm waters.

SAF-2.4 As development intensifies and/or as redevelopment occurs in the City, ensure that storm drain systems are adequate to accommodate any intensification of uses, as well as existing uses.

SAF-2.5 Periodically review and recommend appropriate changes to the Los Angeles County Department of Public Works for the Storm Drainage Master Plan for Los Angeles County.

Implementation Measures:

SAF-IM-2.1 Target areas which experience storm drainage deficiencies for improvements through the Capital Improvement Program.



RA/D: Public Works
FS: CIP
TF: 2003-08

SAF-IM-2.2 Propose that the Los Angeles County Department of Public Works construct and operate a new storm water pump station in an area prone to flooding.)

RA/D: Public Works
FS: CIP
TF: 2003-2004

Goal: SAF-3: Minimize the effects from natural and urban disasters to reduce, to the extent possible, the social and economic impacts that these may have on the community.

Policies: SAF-3.1 Continue to ensure that each development or neighborhood in the City has adequate emergency ingress and egress.

SAF-3.2 Maintain and update, as necessary, the SEMS Multi-Hazard Functional Plan which identifies emergency response and recovery actions in the event of an incident.

SAF-3.3 Continue to be able to provide assistance in shelter, relief and first-aid operations.

SAF-3.4 Work with the City’s Public Information Office and Public Safety Division and the County Fire and Sheriff’s Departments to promote and expand public education programs and seminars on safety.

SAF-3.5 Support legislation and tax measures which tie disaster insurance and tax rates to hazard reduction measures.

Implementation Measures:

SAF-IM-3.1 Review neighborhood access needs and solve problems, if possible. *(Implements SAF-3.1)*

RA/D: Engineering, Planning
FS: General Fund, Gas Tax
TF: 2004-2005 and Ongoing

SAF-IM-3.2 Regularly update the SEMS Multi-Hazard Functional Plan. *(Implements SAF-3.2)*

RA/D: Public Safety
FS: General Plan
TF: Annually



SAF-IM-3.3 Meet regularly with aid agencies to coordinate resources. *(Implements SAF-3.3)*

RA/D: Public Safety
FS: General Fund
TF: Ongoing

SAF-IM-3.4 Meet and implement regular safety educational programs. *(Implements SAF-3.4)*

RA/D: Public Safety/PIO
FS: General Fund, Grants
TF: Ongoing

SAF-IM-3.5 Monitor legislation and prepare positions for the City Council. *(Implements SAF-3.5)*

RA/D: Public Safety, City Attorney
FS: General Fund
TF: Ongoing



ISSUE: PUBLIC SAFETY RELATING TO THE HANDLING AND EXPOSURE OF THE COMMUNITY TO HAZARDOUS MATERIALS

The administration of appropriate safety procedures to protect the public from accidents involving the handling, use and transportation of hazardous materials is important.

Goal: SAF-4: Minimize the threat to the public health and safety and to the environment posed by a release of hazardous materials.

Policies: SAF-4.1 Strictly enforce federal, state and local laws and regulations relating to the use, storage, and transportation of toxic, explosive, and other hazardous and extremely hazardous materials to prevent unauthorized discharges.

SAF-4.2 Periodically review and amend the appropriate ordinances which regulate the storage and handling of hazardous materials to conform with the standards and definitions of the state and other regulatory agencies.

SAF-4.3 Through the planning and business permit processes, continue to monitor the operations of businesses and individuals which handle hazardous materials.

SAF-4.4 Explore the possibility of identifying specific routes for the transport of hazardous materials, to include both railroad and street systems.



- SAF-4.5 As truck routes within the City are altered, inform Caltrans and transporters of hazardous materials of the changes.
- SAF-4.6 Develop an educational awareness program which encourages proper residential management of hazardous materials.
- SAF-4.7 Continue to implement the goals, policies and programs identified in the City's Household Hazardous Waste Element.
- SAF-4.8 Maintain cooperative relationships with the chemical handlers, response agencies and community representatives through such organizations as South Bay Community Awareness and Emergency Response (CAER), to ensure an informed and coordinated response to chemical emergencies.

Implementation Measures:

- SAF-IM-4.1 Require that businesses located within ¼-mile or less from a residential neighborhood, or ½-mile from a critical care facility follow the strictest guidelines possible regarding the handling, storage, containment, and transportation of extremely hazardous substances.

RA/D: Public Safety
FS: General Fund
TF: Ongoing

- SAF-IM-4.2 Continue to conduct periodic inspections of all businesses using or storing hazardous materials to ensure safe practices and improve communications with business personnel.

RA/D: Public Safety
FS: General Fund
TF: Ongoing



ISSUE: URBAN FIRES

Urban fires represent a significant risk to both residents and workers within Carson. Fires in commercial and industrial areas can result in the release of hazardous toxic substances, fires in high occupancy apartment and office buildings present special safety problems, and fires spread by “branding,” wind driven embers, can threaten whole neighborhoods where roofing materials are not fire resistant.



Goal: SAF-5: Minimize the public hazard from fire emergencies.

Policies: SAF-5.1 Coordinate with the Fire Department to provide fire and paramedic service at standard levels of service.

SAF-5.2 Continue to involve the Fire Department in reviewing and making recommendations on projects during the environmental, site planning and building plan review processes.

SAF-5.3 Continue to work with the Fire Department to ensure their capability to address fires and other emergencies at refineries, tank farms, and other heavy industrial facilities within the City.

SAF-5.4 Work with the City's Public Information Office and County Fire Department to promote and expand public education programs and seminars on safety and emergency response for those areas surrounding refineries, tank farms, and other heavy industrial facilities.

SAF-5.5 Continue to enforce current regulations which relate to safety from fire, particularly in critical and high occupancy facilities.

SAF-5.6 Work with the City's Public Information Office and the Fire Department to continue to promote and enhance public outreach programs which educate the community about the importance of fire resistant building materials, promote the use of smoke alarms/detectors, and highlight other ways to reduce the public hazard from fire emergencies.

Implementation Measures:

SAF-IM-5.1 Request that the Fire District maintain a level of service to allow for personnel to attend meetings and to respond promptly to the City's environmental, site planning, and building plan review processes.

RA/D: Fire, Planning Division
FS: District
TF: Ongoing

SAF-IM-5.2 Continue to conduct annual fire prevention inspections.

RA/D: Fire
FS: District
TF: Ongoing



SAF-IM-5.3 Urge the use of smoke alarms, sprinkler systems, evacuation ladders, and offer fire protection and/or risk reduction devices.

RA/D: Fire, Building and Safety
FS: District, General Fund
TF: Ongoing

SAF-IM-5.4 Encourage the replacement of wood shake roofs with Class C roofing materials or better.

RA/D: Fire, Building and Safety
FS: District, General Fund
TF: Ongoing



ISSUE: SAFETY FROM CRIME

Safety from crime is a primary concern in any community; specific concerns in Carson relate to graffiti, gang activity, burglary, and assault.

Goal: SAF-6: Strive to provide a safe place to live, work and play for Carson residents and visitors.

Policies: SAF-6.1 Coordinate with the Sheriff’s Department to provide sheriff service at standard levels of service.

SAF-6.2 Continue to involve the Sheriff’s Department in reviewing and making recommendations on projects during the environmental, site planning and building plan review processes. To this end, promote the development of defensible spaces, or Crime Prevention Through Design (CPTD), through the use of site and building lighting, visual observation of open spaces, and secured areas.

SAF-6.3 Develop standards and/or guidelines for new development and redevelopment with an emphasis on site and building design, or CPTD, to minimize vulnerability to criminal activity. Said standards and/or guidelines shall balance public safety and design objectives, and at a minimum address:

- High risk circumstances such as dark alleys, enclosed stairwells, and dark entrances,
- Site security lighting, including exterior lighting that enhances safety and night use (but minimize impacts on surrounding land uses),



- Utilization of landscape treatments which will not obstruct the visibility of walkways and entrances, and
 - Similar public safety and design issues.
- SAF-6.4 Maintain and improve the effectiveness of code enforcement and policing programs such as increased community policing activities, such as foot and bicycle patrols in areas where warranted, and related programs.
- SAF-6.5 Continue to promote and enhance the Sheriff Department's public outreach programs.
- SAF-6.6 Continue to promote the Community Watch Programs.
- SAF-6.7 Continue to support strict enforcement of the California Motor Vehicle Code and local speed limits, particularly in the areas near schools and off-ramps from area freeways.
- SAF-6.8 Ensure appropriate signage, street striping and other markings at crosswalks for pedestrian safety. And ensure the visibility of signage and markings through proper landscape maintenance including trimming of shrubbery and trees.
- SAF-6.9 Evaluate the need for future new Sheriff facilities.

Implementation Measures:

- SAF-IM-6.1 Train new planners in the principles of CPTD. *(Implements SAF-6.2)*
- RA/D:** Planning, Sheriff
FS: General Fund
TF: Ongoing
- SAF-IM-6.2 Prepare CPTD standards and guidelines for public use. *(Implements SAF-6.3)*
- RA/D:** Planning, Sheriff
FS: General Fund
TF: 2005-2006
- SAF-IM-6.3 Prepare a display for the City Hall lobby showing the principles of CPTD. *(Implements SAF-6.3)*
- RA/D:** Planning, Sheriff
FS: General Fund
TF: 2005-2006



SAF-IM-6.4 Work with the Sheriff’s Department to implement and fund existing and new policing and community programs. *(Implements SAF-6.4-SAF-6.7)*

RA/D: Public Safety, Sheriff
FS: General Fund, Grants
TF: Ongoing

SAF-IM-6.5 Provide flyers and other materials promoting safety measures for youth, including bicycle, skateboard and scooter helmets and other protection. *(Implements SAF-6.5)*

RA/D: Sheriff, Recreation Services
FS: General Fund, Grants
TF: Ongoing

SAF-IM-6.6 Research, implement, and maintain pedestrian safety devices. *(Implements SAF-6.8)*

RA/D: Engineering, Public Works, Sheriff
FS: General Fund, Grants
TF: 2003-2004 and Ongoing

SAF-IM-6.7 Identify needs and alternatives for providing new Sheriff facilities. *(Implements SAF-6.9)*

RA/D: Sheriff, Public Safety, City Manager
FS: General Fund
TF: 2006-2007

Goal: SAF-7: Reduce, to the greatest extent possible, the number of violent or criminal acts perpetrated, with specific emphasis on youth.

Policies: SAF-7.1 Continue to take a “zero tolerance” approach to gangs and gang activity in Carson.

SAF-7.2 Continue to work with the community, and specifically involve and educate parents, to reduce criminal behavior by Carson’s youth.

SAF-7.3 Continue to support immediate, positive consequences for minor criminal behavior by youth, such as graffiti removal programs, restitution programs, and other effective acceptable programs.



- SAF-7.4 Continue to encourage and promote jobs programs for youth in both the public and private sector in order to reduce crime.
- SAF-7.5 Work with the City's Public Information Office and the Sheriff's Department to promote community awareness regarding drug use, graffiti, gangs, and other youth related crimes.
- SAF-7.6 Maintain the comprehensive Carson Youth Accountability Network and youth diversion programs. These programs should include education, intervention, and enforcement strategies.

Implementation Measures:

- SAF-IM-7.1 Sheriff, Public Safety, and City Management implement existing and new programs targeting youth crime. *(Implements SAF-7.1, SAF-7.3, SAF-7.5-SAF-7.7)*

- RA/D:** Sheriff, Public Safety, City Manager
 - FS:** General Fund, Grants
 - TF:** Ongoing

- SAF-IM-7.2 Research and implement new jobs programs for youth. *(Implements SAF-7.4)*

- RA/D:** Employment Development
 - FS:** Federal and State Grants
 - TF:** Ongoing

